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紫斑牡丹及其一新亚种*

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PAEONIA ROCKII AND ITS ONE NEW SUBSPECIES FROM MT. TAIBAI, SHAANXI OF CHINA

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Abstract　The history of exploration and classification of *Paeonia rockii* is reviewed in the present paper. Two allopatric subspecies in this species are recognized. The new subspecies, subsp. *taibaishanica* Hong, found on northern slope of the Qingling Range has leaflets ovate or rounded, totally or mostly lobed. *P. rockii* subsp. *linyanshanii* T. Hong et G. L. Osti is found to be a superfluous name of *P. rockii* subsp. *rockii*.

Key words　*Paeonia rockii*; *P. rockii* subsp. *taibaishanica*; Classification; Distribution

摘要　本文回顾了有关紫斑牡丹的调查和分类历史。它曾被混同于 *P. suffruticosa*, *P. papaveracea* 及 *P. suffruticosa* var. *papaveracea*。它以叶2至3回羽状复叶,小叶17～33,花瓣白色,基部有大紫斑,花丝黄色,花盘和柱头淡黄色区别于近缘种。种下分化为两个异域的亚种;秦岭北坡的紫斑牡丹小叶全部或大部分分裂,是一个新亚种,*P. rockii* subsp. *taibaishanica*, 而 *P. rockii* subsp. *linyanshanii* T. Hong et G. L. Ostii 则是 *P. rockii* subsp. *rockii* 的多余名。

关键词　紫斑牡丹;太白山紫斑牡丹;分类;分布

紫斑牡丹是牡丹复合体(*Paeonia suffruticosa* complex)中一个自然的野生类群。但是对于这一群花朵最大且极为美丽的牡丹,分类上却走了很长一段路才对它予以正确认识和处理。首先记录它的是英国人 R. Farrer。他于1913年在甘肃南部采集,在山坡上发现一株野生牡丹,花大,每片洁白的花瓣基部均有一个清晰分明的紫斑(Farrer, 1914)。根据现有资料,他也是第一个采到紫斑牡丹标本的人,他的标本后来被作为 *Paeonia suffruticosa* subsp. *rockii* S. G. Haw et L. A. Lauener(1990)的模式标本。第二个采到紫斑牡丹标本的要算 J. F. Rock。他于1925～1926年在甘肃卓尼喇嘛庙里住了一年之久,在院里发现一株非常美丽的牡丹,花单瓣。他采集了种子,寄回美国。这些种子后来在美国、加拿大、瑞典和英国培育成功。这种植物后来被称为"Rock's Variety",其花象 Andrews (1807)的 *Paeonia papaveracea*,但 Rock's Variety 的花盘白色(Stern, 1946),而 Andrews 的花盘紫色,且小叶也大些。这些植物留有腊叶标本在 Kew. Stern (1946)已经看到了"Rock's Variety"的标本,也看到了 Andrews 的 *P. papaveracea*。但很遗憾,他竟然把它们以及公园里栽培的牡丹品种,即 *P. suffruticosa*, 混为一谈。所以, Stern (1946)专著中的"*P. suffruticosa*"虽然把 Rehder 的"var. *spontanea*"分立出来,却仍然

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是一个混杂体，其中包括了广泛作为花卉栽培的 *P. suffruticosa*, Andrews 的 *P. papaveracea*，还有野生的和在甘肃卓尼喇嘛庙里栽培的紫斑牡丹"Rock's Variety"。我们检查了 *P. papaveracea* Andrews 的模式(Andrews: Bot. Rep. 7: t. 463. 1807)，它的花单瓣，白色、具紫斑，象紫斑牡丹，但花丝紫红色，花盘紫色，柱头红色，小叶大而分裂，又象矮牡丹 *P. jishanensis* T. Hong et W. Z. Zhao (*P. suffruticosa* subsp. *spontanea* (Rehder) S. G. Haw et L. A. Lauener)。我们在延安万花山牡丹园周围栽培地和柏树林中找到了和 Andrews 的模式一模一样的植株，而牡丹园及其附近有紫斑牡丹和矮牡丹。我们猜想，真正的 *P. papaveracea* Andrews 是紫斑牡丹和矮牡丹之间的杂种(Hong and Pan, in press)。它显然与紫斑牡丹不同。紫斑牡丹叶为 3 回(少为 2 回)羽状复叶，花单瓣，花瓣白色，基部有一块大紫斑，花丝黄色，花盘和柱头淡黄色。在中文文献中第一次称"紫斑牡丹"并正确描述它的是《中国高等植物图鉴》(中国科学院植物研究所，1972)。但是由于当时未能见到 Andrews 的模式，它被错误地定为"*P. papaveracea* Andrews"。潘开玉(1979)也不恰当地把它定为 *P. suffruticosa* var. *papaveracea* (Andrews) Kerner. Haw and Lauener (1990)认识到"*papaveracea*"一名不能用于紫斑牡丹，于是把它命名为 *P. suffruticosa* subsp. *rockii* S. G. Haw et L. A. Lauener。洪涛等(1992)正确地把它提升为种，*P. rockii* (S. G. Haw et L. A. Lauener) T. Hong et J. J. Li。两年后，洪涛等(1994)又在这个种下描述了一个新亚种，*P. rockii* subsp. *linyanshanii* T. Hong et G. L. Osti。我们根据多年的野外考察和腊叶标本观察，认为紫斑牡丹确实已分化为两个异域的类型。陕西太白山和陇县及甘肃天水(白杨林)的植物小叶大部分深裂，而其余地区的植物小叶披针形或卵状披针形，不裂或仅少数分裂。后者正是 *P. rockii* subsp. *linyanshanii* 所指的类型。但是，*P. rockii* 的模式(甘肃，大概武都附近，Farrer no 8, E)照片(Fig. 1) 显示，它也是小叶卵状披针形，大多不裂。因此，*P. rockii* subsp. *linyanshanii* 和 *P. rockii* subsp. *rockii* 实际上是同一类群，而且它们的模式产地分别为甘肃文县和武都，也是相邻县。这样，*P. rockii* subsp. *linyanshanii* 是多余名，而太白山的类型(Fig. 2)却仍未描述，应作为新亚种处理。于是，紫斑牡丹的分类应是如下：

1　紫斑牡丹(中国高等植物图鉴)

Paeonia rockii (S. G. Haw et L. A. Lauener) T. Hong et G. L. Osti in Bull. Bot. Res. 12(3): 227. Fig. 4. 1992.

Paeonia suffruticosa Andrews subsp. *rockii* S. G. Haw et L. A. Lauener in Edinb. J. Bot. 47(3): 279. Fig. 1a(p. 276). 1990. TYPE: Kansu (Gansu), Probably near Wu-tu (Wudu), Farrer no 8 (holotype, E; photo, PE!)

As a member of the *P. suffruticosa* complex, *P. rockii* is similar to the other species in the complex in having 5 (very occasionally 6) carpels which are entirely enveloped by floral disc at anthesis. The species is characterized by tri-(or bi-) pinnate leaves, well developed leaves(the first 1～3 from base) with (17) 19～33 leaflets, yellow filaments, yellowish floral disc and stigmata, and white petals with a dark purple blotch at the base. All the other three species in the complex, *P. suffruticosa*, *P. ostii* and *P. qiui*, have purple-red filaments, purple floral disc and red stigmata. A leaf in *P. ostii*, though bipinnate, has 15

leaflets as the highest number and thus differs from that in *P. rockii*; petals in *P. qiui* also often have a blotch at the base, but the bloth is pink-red, rather than dark purple.



Fig. 1 The holotype of *Paeonia suffrutciosa* Andrews subsp. *rockii* S. G. Haw et L. A. Lauener (Gansu, probably near Wudu, Farrer no 8, E)

紫斑牡丹也和牡丹复合体中的其他种一样，心皮通常5个，偶尔6个，开花时完全被花盘包裹。但紫斑牡丹是一个很独特的种，其叶为3回(少2回)羽状复叶，发育最好的叶片(分枝下部1～3片)小叶数为(17)19～33，花丝黄色，花盘和柱头淡黄色至近白色，花瓣白色，基部有一个大而深紫色斑块。该复合体中的其他三个种，牡丹 *P. suffruticosa*、卵叶牡丹 *P. qiui* Y. L. Pei et Hong 和药用牡丹 *P. ostii* T. Hong et J. X. Zhang 的花丝紫红色，花盘紫色，柱头红色。药用牡丹的叶虽也为羽状复叶，但其小叶数不超过15，下面无毛；卵叶牡丹花瓣基部虽也有斑块，但其斑块为浅红色，小叶仅有9枚。紫斑牡丹之下可辨认出两个异域的亚种：

1a. Leaflets lanceolate to ovate-lanceolate, totally or mostly entire …… subsp. **rockii**

1b. Leaflets ovate to ovate-rounded, totally or mostly lobed ………………………… subsp. **taibaishanica** Hong

1a 紫斑牡丹 模式亚种

Paeonia rockii subsp. **rockii**

Paeonia rockii subsp. *linyanshanii* T. Hong et G. L. Osti in Bull. Bot. Res. 14(3): 237. Fig. 1 & 2. 1994, syn. nov. TYPE: Gansu, Wenxian, Baimahegou, alt. 1570 m, 1993-04-27, Q. R. Zhang, 19930428 (CAF)

Paeonia papaveracea auct. not. Andrews: anonymous, Icon. Cormophyt. Sin. 1: 652. Fig.1303. 1972.

P. suffruticosa var. *papaveracea* auct. non Andrews: K. Y. Pan, in Wang, W. T. (ed.): Fl. Reip. Pop. Sin. 27:45, pl. 3(p.43). 1979.

This subspecies has leaflets lanceolate or ovate-lanceolate, totally or mostly entire.

Gansu(甘肃), Zhugqu(舟曲), Taozhou Forest Farm(洮州林场), on edges of *Pinus armendii* forests, alt. 2800 m, 1959-05-22, S. Jiang and T. L. Chin(姜恕、金存礼) 423 (PE); no precise locality, Y. L. Pei, 9116 (PE); Wudu(武都), Lanshan, alt. 2500 m, 1930-06-21, K. S. Hao 501 (PE); Wenxian(文县), no precise locality, Y. L. Pei 9115 (PE); Mt. Zilong(子龙山), Shihuigou(石灰沟), 1956-05-14, Yellow River Exped.(黄河队) 3698 (PE). **Shannxi**(陕西): Lueyang(略阳), Baishuijiang Town(白水江镇), Siping Village(四平村), Y. L. Pei(裴彦龙)9140 (PE). **Henan**(河南): Songxian(嵩县), Muzhijie Township(木植街乡), Mt. Yangshan(杨山), Yangjiaohao(羊角毫), W. slope, limestone, in *Ulmus* forest, alt. 1450 m, 1994-05-02, D. Y. Hong and Y. Z. Ye(洪德元和叶永忠)94003 (PE); eodem loc., Daxigou(同地,大西沟), under limestone rock, 1994-05-02, S. Y. Wang and Y. Z. Wang(王遂义和王印政)94002 (PE); Xisangou, alt. 1080 m, 1994-05-07, H. Y. Jia(贾怀义)023(PE) and 024 (PE); Neixiang, Baotianman(宝天曼), Muzhuliu Village, Mudanduo(牡珠琉村,牡丹垛), alt. 1100 m, 1997-04-30, D. Y. Hong, Y. Z. Ye and Y. X. Feng(洪德元,叶永忠和俸宇星)H97015 (PE, MO); eodem loc, Muzhuliu Village, in cultivation, 1997-04-30, D. Y. Hong, Y. Z. Ye and Y. X. Feng H97016(PE, A, CAS, K, MO, S). **Hubei**(湖北), Shennongjia(神农架), Songbai

(松柏), alt. 1900 m, 1988-05-06, J. Z. Qiu(邱均专)PB88027(PE), PB88028 (PE) and PB88029 (PE); eodem loc., alt. 2000 m, 1988-05-06, J. Z. Qiu PB88030 (PE); eodem loc. alt. 2100 m, 1988-05-06, J. Z. Qiu PB88031(PE) and Pb88032 (PE); eodem loc., alt. 1900 m, 1988-05-20, J. Z. Qiu PB88033 (PE); eodem loc., alt. 1600 m, 1988-05-20, J. Z. Qiu PB88035 (PE); Songbai(松柏), Shantunya(山屯崖), 1988-05, J. Z. Qiu PB88601(PE); Songbai(松柏), shady slope, in forests, alt. 1400～1800 m, 1986-05-18, T. Chen and L. M. Ma(陈陶和马黎明)PB86008 (PE) & PB86075(PE); Baokang(保康), Houping Town(后坪镇), Hongjiayuan Village(洪家院村), in front of Mr. Su's hou-

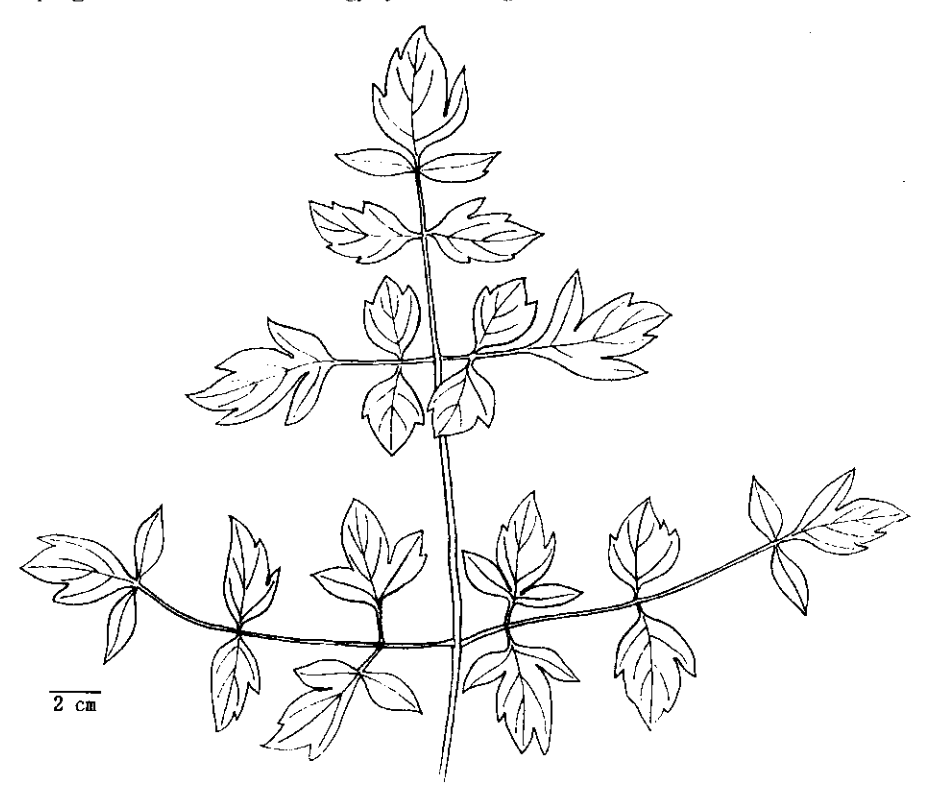


Fig.2 A leaf of *Paeonia rockii* subsp. *taibaishanica* Hong (drawn by Miss Hong L. on Hong, D. Y. and Zhu, X. Y. PB85061, the holotype)

se(舒远志家门前), in cultivation, 1997-05-02, D. Y. Hong, Y. Z. Ye and Y. X. Feng (洪德元、叶永忠、俸宇星)H97024 (PE); Houping Town(后坪镇), Zhanjiapo Village(詹家坡村), in deciduous forest, on limestone rocks, alt. 1360 m, 1997-05-05, D. Y. Hong and Y. X. Feng H97051(PE, A, CAS, K, MO, S).

1b 太白山紫斑牡丹 新拟

Paeonia rockii subsp. **taibaishanica** Hong, subsp. nov. TYPE: Shaanxi(陕西), Mt. Taibai, Shangbaiyun(太白山上白云), alt. 1750 m, in forest, on cliff, 1985-05-24, D. Y. Hong and X. Y. Zhu(洪德元和朱相云)PB85061(holotype, PE). Fig.2

Paeonia suffruticosa Andrews var. *spontanea* Rehder in J. Arn. Arb. 1. 193. 1920, p. p. quaod specim. Mt. Taibai.

A subspecie typica foliolis ovatis vel orbicularibus, plerumque lobatis differt.

This subspecies differs from the typical one in leaflets ovate or rounded and mostly or totally lobed. Geographically they are allopatric or almost so.

Haw and Lauener's (1990) "*rockii*" seems to include two subspecies. Their Fig. 1a may be based on J. Rock's specimen (Rock's Variety) from a lamasery at "Choni" (Jone) in Gansu and is apparently different from the type. "Rock's Variety" is very similar to the specimens from Mt. Taibai and belongs to the new subspecies. I suppose that "Rock's Variety" was brought by monks from a lamasery or a temple in Mt. Taibai in Shaanxi to Jone in Gansu.

Shannxi(陕西): Mt. Taibai (太白山), 1985-10-13, X. Y. Zhu and Z. H. Wu PB85086 (PE); eodem loc., Dadian Lamasery (太白山大殿), alt. 2300 m, in cultivation, 1985-05-24, D. Y. Hong and X. Y. Zhu(洪德元、朱相云)PB85066(PE); eodem loc., Shangbaiyun (太白山上白云), in front of the temple, alt. 1820 m, in cultivation, 1997-05-08, D. Y. Hong, Y. Z. Ye and Y. X. Feng(洪德元、叶永忠和俸宇星)H97058(PE, A, CAS, K, MO, S); eodem loc., Heihuguan (太白山黑虎关), among bushes, 1939-05-05, K. T. Fu 2584 (PE); Mt. Taibai, purdom, s. n (A! syntypes of *P. suffruticosa* var. *spontanea* Rehder); Longxian (陇县), Y. L. Pei 916001(PE). **Gansu**(甘肃): Tianshui (天水), Baiyanglin(白杨林), Z. W. Zhang(张振万)13(PE).

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